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(54) **Disposable diaper.**

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Description

The present invention relates to a disposable diaper of the type as outlined in the preamble of claim 1.

- 5 A disposable diaper of a panty type is described in EP-A-0 187727. The known disposable diaper includes a top sheet, a backsheet and an absorbent material interposed therebetween; the topsheet, the back sheet and the absorbent material forming an integrated body unit. Elastic members are used to gather the waistband portion and to gather portions surrounding the leg openings.

10 The pants described in US-A-2 733 715 is not disposable but contains a washable pants sheath and an absorbent pad attached only to the lower portion of the leg surrounding opening. The legs surrounding portion of the pants sheath is only gathered within the portion to which the pad is attached. The pants sheath further contains several elastic members only attached to the pants sheath and surrounding the waist opening and the waist portion between the waist opening and the leg openings. The elastic members are adapted only to gather the pants sheath while the absorbent pad lies flat onto the inner side of the gathered sheath and is attached thereto by releasable fastening means.

15 US-A-2 954 770 describes a woman's sanitary panty having gathered leg surrounding opening portions and a gathered waist opening surrounding portion. Intermediate the waist opening gathering and the leg opening gatherings, a further elastic member is attached which surrounds the waist portion. This further elastic means is necessary for carrying the napkin suspension element, so that this element must not be suspended from the waist encircling elastic member.

20 As another type of disposable diapers there is known, for example, a flat type in which both side edges (side flaps) of the back portion are provided with fastening devices which, when in use, are fastened to the stomach portion of the body (Japanese Patent Publication No. Sho 52-40287).

25 A further shorts type disposable diaper in which a pair of right and left side flaps formed along both longitudinal sides of its body are connected and fixed together at both stomach and back portions to form a pair of right and left leg opening portions and a unitary waist opening portion is described in Japanese Patent Early Laid-open Publication No. Sho 61-207605. In the shorts type disposable diaper, both the pair of leg opening portions and the unitary waist opening portion are designed to be expandible so as to fit to the wearer's body. Usually, since the wearer himself can wear this shorts type disposable diaper in his standing state, it is used as a toilet training underwear for a baby to prompt him to be free from a diaper as soon as possible. It is also used for an incontinent person, or an adult who can walk.

30 The shorts type disposable diaper of this type has such feature, when compared with the so-called flat type diaper, as that the wearer can pull it up and down by himself just like a normal underwear. In order to satisfy the requirement that the wearer himself can easily wear it without leakage of waste materials, the shorts type disposable diaper is required to have an excellent fitness. Moreover, it is required to have a favorable compliance to the wearer's busy action.

35 In order to meet with such requirements as mentioned above, Japanese Patent Early Laid-open Publication No. Hei 2-4364 discloses a constitution, wherein an expandible side panel (side member) is provided to side portions for connecting a stomach portion with a back portion of a body, and elastic members are provided to an end portion of the stomach side and an end portion of the back side of the body.

40 The side panels are of a unitary member, and the physical property of each portion is the same. Accordingly, in order to increase the fastening force for preventing a slip-down and enhancing the fitness, the expansion of the whole side panels is required to be increased. However, if the expansion is increased, an excessive oppressive sensation is given to the wearer or the increased expansion jeopardises the wearer's putting-on and putting-off performance.

45 An object of the present invention is to provide a disposable diaper capable of surely preventing the leakage of waste material, reducing the costs, and allowing the diaper to be smoothly put on or taken off.

In accordance with claim 1, the present invention has achieved the above object by providing a disposable diaper of the shorts type including a body having a liquid permeable topsheet, a liquid impermeable backsheet, and an absorbent member interposed therebetween, forming an integrated body unit, said body unit being divided into a stomach portion which, when in wear, is located on a wearer's stomach side and a back portion which, when in wear, is located on his back side, the stomach portion and the back portion being connected and fixed together at both side edge portions, respectively, of said stomach and back portions to form a pair of leg opening portions, a unitary waist opening portion and a waist portion located between the waist and the leg opening portions, wherein the waist opening portion and pair of leg opening portions are provided around entire peripheral edges (which are also referred to as surrounding portions) thereof with elastic members forming substantially continuous gathers, and wherein a further elastic member is attached to the body unit for forming gathers at least partially in the surrounding

direction of the waist portion between the waist opening elastic member and the leg opening elastic members.

Furthermore, the present invention has achieved the above object by providing the disposable diaper with elastic members the expanding stresses thereof in the surrounding direction of the surrounding portions of the waist opening portion, the leg opening portions and the waist portion are different.

When the disposable diaper of the present invention is in wear, the substantially continuous gathers, which are integrally formed with the body, continuously act on the waist opening, the waist portion and the pair of leg opening portions. As a result, no gap is formed between the diaper and its wearer and it can surely prevent the leakage of waste material from the diaper.

The term "continuously" refers to a state where expanding lines of stress are continuous without interruption. It suffices, if, for example, the gathers are substantially continuous through the connected portion and they are not necessarily be continuous as the elastic members.

Further, since the continuous gathers are integrally formed with the body unit of the diaper, the component parts can be reduced when compared with the prior art where the body is formed of a separate member, the manufacturing process can be simplified, and the manufacturing cost can be reduced.

Furthermore, the gathers of the present invention can be improved in fitness and handling by arranging a plurality of elastic members in juxtaposed relation or superposed relation.

Embodiments of the present invention are hereinafter described by reference to the figures wherein:

Fig. 1 is a view showing a developed state of a disposable diaper according to an embodiment of the present invention.

Fig. 2 is a perspective view of the disposable diaper of Fig. 1, showing a state when it is supposed to be worn by a wearer.

Fig. 3 is a perspective view of a disposable diaper according to another embodiment of the present invention, showing a state when it is supposed to be worn by a wearer.

Fig. 4 is a perspective view of a disposable diaper according to still another embodiment of the present invention, showing a state when it is supposed to be worn by a wearer.

Fig. 5 is a explanatory view showing wearer's portions corresponding to the disposal diaper when the diaper of Fig. 4 is supposed to be worn by him.

Several embodiments of the present invention will be described in detail with reference to Figs. 1 through 5 of the accompanying drawings.

A disposable diaper 1, 15, 18 of the present invention includes an integrated body unit 5 which comprises a liquid impermeable topsheet 2, a liquid impermeable backsheet 3 corresponding to the topsheet 2, and an absorbent member 4 fixedly interposed between both the topsheet and backsheet 2 and 3 and adapted to absorb waste material.

The body unit 5 is divided into a stomach portion 5a which, when in wear, is located on the wearer's stomach side and a back portion 5b which, when in wear, is located on his back side, the stomach portion 5a and back portion 5b being symmetric with reference to a vertical center line which is located generally at its center.

In the stomach portion 5a and back portion 5b the body unit 5 is provided on both longitudinal edges thereof with a pair of waist flaps 7a, 7b extending outward from the absorbent member 4 in longitudinal direction, and a pair of right and left side flaps 9a, 9b extending outward from both side edges of the absorbent member 4 in the width direction thereof. Elastic members 8a, 8b form a gather on each waist flap 7a, 7b, and elastic members 11a, 11b form a gather on each leg portion 10a, 10b of each side flap 9a, 9b.

Both the back and stomach portions 5b, 5a are partially connected and affixed at both the side edges 12b, 12a to form the waist opening portion 13 and a pair of right and left leg opening portions 14a, 14b (see Fig. 2).

The waist flaps 7a, 7b and the side flaps 9a, 9b are the overlapped portions of the topsheet and backsheet 2 and 3 and are integral with the body unit 5.

The elastic members 8a, 8b of the waist flaps 7a, 7b are continuously connected with the topsheet 2 and backsheet 3 as a plurality of yarn-like members arranged in generally parallel relation along the edges of the waist flaps 7a, 7b. When the waist opening portion 13 is formed by this, the elastic members 8a, 8b of the waist flaps 7a, 7b are continuously arranged along the peripheral edge of the waist opening portion 13.

On the other hand, the elastic member 11a, 11b is arcuate. The arcuate elastic member 11a, 11b is formed in an arcuate configuration along a horseshoe shape of each leg portion 10a, 10b at the side flaps 9a, 9b. The elastic members 11a, 11b of this side flap are arranged adjacent to the edges of the pair of leg portions, that is, adjacent to the side edges of the side flaps 9a, 9b in the under-crotch area, the distance from the side edges to the outermost edges of the elastic members 11a, 11b of the side flap is preferably

0~ 50mm and more preferably 0~ 20mm and the distance from the outer edge of the absorbent member to the innermost edges of the elastic members 11a, 11b is preferably 0~ 50mm and more preferably 0 ~ 20mm.

The elastic members 11a, 11b of the side flap are connected to the body unit 5 of the shorts type disposable diaper 1, 15, 18 in generally stretched states by means known per se, such as ultrasonic welding, heat welding, adhesive agent, etc. Any material known in the art, such as yarn rubber, flat rubber, film type rubber or tape-like foam polyurethane can be used, and a unitary piece or a plurality of pieces may be used. In general, however, the the elastic members 11a, 11b of the right and left side flaps are arranged in symmetric relation. The stress is preferably 70~ 100g when they are stretched 150%.

The elastic members 8a, 8b of the waist flap are preferably of non-woven fabric tape having expansibility, the expansibility being preferably larger in the width direction rather than in the longitudinal direction. The elastic members 8a, 8b of the waist flap are connected and fixed to the waist flaps 7a, 7b by known means in the art such as adhesive agent such as hot melt, ultrasonic welding, heat welding, etc. Further, the elastic members 8a, 8b of this waist flap are connected in such states as being expansible.

The term "connected" used herein refers to a state where both the elastic members are contacted with each other in such a manner as to be able to generate at least an expanding line of stress as in the above term "continuously", and preferably connected in such a manner as to be, either directly or indirectly, superposed one upon the other.

The topsheet 2 is a liquid permeable sheet for permeating waste material to the absorbent member 4 and preferably has a feel something like an undergarment. Examples of such liquid permeable sheet are preferably woven fabrics, nonwoven fabrics, perforated films and the like. The permeation leakage of waste materials such as urine and the like from the edge portion of the topsheet 2 can be prevented by applying a water repellent treatment to the peripheral edge portion of the top sheet by a method for applying a hydrophobic compound such as silicon series oil solution, paraffin wax and the like to the peripheral edge portion of the topsheet 2 or by a method for applying a hydrophilic compound such as alkyl phosphoric ester to the peripheral edge portion of the topsheet 2 in advance and then cleaning the peripheral edge with hot water.

The backsheet 3 is preferably a moisture permeable and liquid impermeable sheet able to permeate vapor therethrough and formed of a thermoplastic resin and filler added thereto and stretched and more preferably a sheet having a feel something like an undergarment. Examples of such liquid impermeable sheet are a composite material of film and a woven fabric or a composite material of film and a woven fabric.

The absorbent member 4 used in the disposable diaper 1, 15, 18 of this embodiment is preferably comprised of a fluff pulp as a chief component material and a high molecular water absorbent polymer as a secondary material, or a mixture of a thermoplastic resin, a cellulosic fiber and a high molecular water absorbent polymer subjected to heat treatment. The existing position of the high molecular water absorbent polymer may be in an upper layer, an intermediate layer or a lower layer, and the high molecular water absorbent polymer may be mixed with pulp. The high molecular water absorbent polymer preferably has an ability for absorbing and holding liquid more than twenty times the dead weight thereof and is in a grain shape having a property able to be gelled. Examples of such high molecular water absorbent polymer are preferably starch-acrylic (salt) graft copolymer, a saponified material of starch-acrylonitrile copolymer, bridged material of sodium carboxymethylcellulose, acrylic (salt) polymer and the like.

The shorts type disposable diaper 1, 15, 18 of this embodiment can be obtained by folding the body unit of the diaper back into a half along the horizontal center line and connecting and fixing both side edges 12b, 12b of the back portion 5b to both side edges 12a, 12a of the stomach portion 5a. At this time, the elastic member 11b of the side flap located on the stomach portion 5a is superposed on the elastic member 11b of the side flap located on the back portion 5b, while the elastic member 8b of the waist flap 7b on the back side is superposed on the elastic member 8a of the waist flap 7a on the stomach side.

When the shorts type disposable diaper of this embodiment is in wear, as is shown in Fig. 2, a continuous gathering is formed at the pair of opening portions 14a, 14b by the elastic members 11a, 11b of the side flap, and a continuous gathering is formed at the waist opening portion 13 by the elastic members 8a, 8b of the back and waist flaps.

Accordingly, in the shorts type disposable diaper of this embodiment, the gather integrally and continuously formed on the body continuously acts on the waist opening portion 13 and the leg opening portions 14a, 14b to enhance the fitness to the wearer and also to surely prevent the leakage of waste material from the diaper.

Further, since the elastic members 8a, 8b of the waist flap and the elastic members 11a, 11b of the side flap are simply contacted with the body unit 5, the component parts can be reduced and the

manufacturing process can be simplified.

Furthermore, by juxtaposing a plurality of elastic members 8a, 8a and 11a, 11b or intersecting them with each other, an expanding stress fitted to the wearer's body shape can be exhibited, thus enabling to enhance the fitness and prevent leakage.

- 5 In a disposable diaper 15 according to the embodiment shown in Figs. 1 and 2, in addition to the elastic members 8a, 8b of the waist flap, a plurality of body-surrounding elastic members 16a, 16b are arranged continuously in belt shape in the surrounding portion of a waist portion located between the waist opening portion and the leg opening portions (the area where the absorbent member 4 is disposed.)

- 10 A disposable diaper 18 shown in Fig. 3 is different from the disposable diaper shown in Figs. 1 and 2 in that body-surrounding elastic members 16a, 16b are arranged at only both side portions of the waist portion and not at the area where the absorbent member 4 of the embodiment shown in Figs. 1 and 2 is disposed.

The elastic members 8a, 8b of the waist flap, the elastic members 11a, 11b of the side flap, and the body-surrounding elastic members 16a, 16b are preferably formed of natural rubbers, polyurethane, foam polyurethane, etc. and may be of yarn or belt form.

- 15 Since the disposable diaper 18 of this embodiment has the above-mentioned constitution, it does not slip out of place downward irrespective of any movements of the baby (wearer). In addition, since no gap is generated at the wearer's side, leakage of waste material can surely be prevented.

Still another embodiment of the present invention will be described with reference to Figs. 4 and 5.

- 20 The diaper 1 shown in Fig. 4 is constituted substantially the same as the diaper 15 shown in Figs. 1 and 2 except the following differences.

In the embodiment shown in Fig. 4, body-surrounding elastic members 16 are arranged at both side portions of the waist portion and at a part of the area where the absorbent member 4 is disposed.

- 25 In this embodiment an elastic member 8 of a surrounding portion A of the waist opening portion is arranged around the surrounding portion A of the waist opening portion thereby forming a waist gather. The elastic members 11a, 11a of a surrounding portion C of the leg opening portions are arranged around the surrounding portion C of the leg opening portions thereby forming a leg gather.

- 30 The elastic members 16, 16 of a surrounding portion B of the waist portion are arranged at both side portions of the waist portion and at a part of the area where the absorbent member 4 is disposed, as shown in Fig. 4, and a gather is formed in the surrounding portion B on which the elastic members 16, 16 are disposed, so that the surrounding portion B can fit the wearer's waist.

- 35 Referring to the elastic member 8 of the surrounding portion A, the elastic members 11a, 11a of the surrounding portion C and the elastic members 16, 16 of the surrounding portion B, it is preferable that those elastic members show the expanding stresses (per 5mm in width and 10mm in length in the expanding direction) of 10 to 120g, 20 to 150g and 30 to 300g, in a 20% stretched state, in a 50% stretched state and in a 100% stretched state, respectively. The elastic members showing about 60g, 140g and 220g, in a 20%, 50% and 100% stretched states, respectively, are used in this embodiment.

Furthermore, the surrounding portion A of the waist opening portion, the surrounding portion B of the waist portion and the surrounding portion C of the leg opening portions are, as shown in Fig. 5, disposed corresponding to a waist area a, a hipbone area b and a groin area c of a baby (wearer).

- 40 Since the surrounding length of the surrounding portion C of the leg opening portions passes over the groin of a wearer, it is largely affected by his activities and the postures. Generally a baby has a figure that the hipbone area b is narrower than the waist area a and the groin area c to form a shape like a constricted barrel (like a sand glass shape). Therefore, the ordinary surrounding length of a diaper when it is worn is shown as surrounding portion A of the waist opening portion > the surrounding portion C of the leg opening portions > surrounding portion B of the waist portion. The maximum variation value (ΔA , ΔB , ΔC) due to wearer's postures and activities is shown as $\Delta A > \Delta C > \Delta B$. The stress put on the each portion of the diaper is in relation of surrounding portion A of the waist opening portion > surrounding portion C of the leg opening portions > surrounding portion B of the waist portion.

- 45 The surrounding length of the portions A, B and C of the diaper of the present invention varies. If the maximum value of the stresses (per 5mm in width and 10mm in length) in a 20% stretched state of the surrounding portions of said waist opening portion, said waist portion and said leg opening portions is 10 to 120g, preferably 10 to 60g, the maximum value of the stresses (per 5mm in width and 10mm in length) in a 50% stretched state thereof is 20 to 150g, preferably 20 to 100g and the maximum value of the stresses (per 5mm in width and 10mm in length) in a 100% stretched state thereof is 30 to 200g, preferably 30 to 150g, a wearer does not feel oppressive sensation, and he can put it on easily. Furthermore, no gap is generated in the surrounding portion A of the waist opening portion and in the surrounding portion C of the leg opening portion, so that an excellent effect to prevent slipping out of place downward and to prevent leaking can be obtained.

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The above-mentioned explanation with reference to Figs. 4 and 5 is also applied to the embodiments shown in Figs. 1, 2 and 3.

(TEST EXAMPLE)

5

The following leak and slip tests were made using disposable diapers (dispers according to other embodiments) listed below.

TEST EXAMPLE 1

10

In this test, the disposable diaper shown in Figs. 1 and 2 was prepared using the under-mentioned material and arranging four waist-surrounding elastic members 16a, 16b, which were in 180% expanded states, in the topsheet and backsheet.

15

Then, the following test was made using this disposable diaper 15. The results are shown in Table listed below.

• TOPSHEET 2

20

Non-woven fabric formed of polypropylene (35g/cm²)

• BACKSHEET 3

Polyethylene film (thickness: 40μ)

25 • ABSORBENT 4

Composite material of fluff pulp and high absorbent polymer (bridged material of polyacrylic Na)

• Elastic members 8a, 8b of waist flap

30

Waist flap film width: 10mm

• Elastic members 11a, 11b of side flap

35

Elastic rubber of 2mm width: 4 pcs.

• Waist-surrounding elastic member 16

Urethane yarn rubber

40

<LEAK TEST AND SLIP TEST>

45

In this test, the above-mentioned disposable diaper 15 was put on a baby model of a weight of 10kg. After the baby model has changed its attitude between a standing state and a sitting state 20 times, the slipping amount of the diaper was measured. Then, the model was laid horizontally or facing downward, an artificial urine (physiological saline solution) was supplied from a tube attached to the model so that the discharging speed of urine from its urine discharging portion will be 5g/sec. The artificial urine was supplied until leak occurs, and the effect of leak was observed. Further, an artificial soft feces mentioned below was supplied from the tube so that the feces discharging speed from its discharging portion will be 4g/sec. The effect of prevention of feces leak was likewise observed in the model's horizontal lying state.

• ARTIFICIAL SOFT FECES: Suspension of bentonite of 3wt.% was adjusted to have a viscosity of 10c.p. by carboxyethyl cellulose

55 TEST EXAMPLE 2

The disposable diaper 18 shown in Fig. 3 was prepared by providing four pieces of elastic material, which was in a 180% stretched state, between a topsheet and a backsheet around a part of a wearer's

waist. Then, the above-mentioned test was made using this disposable diaper. the results are shown in Table listed below.

COMPARATIVE TEST EXAMPLE 1

5

In this test, a comparative item, in which the waist-surrounding elastic members 16a, 16b are not used, was prepared, and the same test as the test examples 1 and 2 was made. The results are shown in the Table listed below.

10 < EVALUATION OF TEST >

According to the results of the tests shown in the following Table 1, the diapers of the present invention were small in slipping length, large in absorbing amount of artificial urine and artificial feces and excellent in antileak compared with the comparative item.

15

Table

	Slipping length (mm)	Absorption until urine leak in horizontal state (g)	Absorption until urine leak in facedown state (g)	Absorption until feces leak in horizontal state (g)
Test 1	5	200	280	100
item 2	10	180	250	90
Comparative item	40	70	120	40

25

That is, the disposable diaper 15 according to the present invention exhibits such effects as that the waist-surrounding part of the diaper 15 fits to the baby's body and leak of waste material from a gap of the gather can surely be prevented, in addition to the above-mentioned effects.

30

It should be understood that the present invention is not limited to the above-mentioned embodiment and can be changed and modified within the scope of the claims.

For example, the elastic members of the side flap are not limited to the shown constitution, so that two elastic members can be used on each side flap, one arranged in arcuate shape and the other elastic member arranged in linear shape intersecting with each other. Alternatively, they may be arranged in a curve shape.

35

Furthermore, the elastic member of the side flap is not limited to its linear arrangement but it may be arranged in a curve shape.

Claims

40

1. A disposable diaper (15, 18) of a shorts type having a liquid permeable top sheet (2), a liquid impermeable backsheet (3), and an absorbent member (4) interposed therebetween, said top sheet (2), said back sheet (3) and said absorbent member (4) forming an integrated body unit (5), said body unit (5) being divided into a stomach portion (5a) which, when in wear, is located on a wearer's stomach side and a back portion (5b) which, when in wear, is located on his back side, said stomach portion (5a) and said back portion (5b) being connected and fixed together at both side edge portions, respectively, of said stomach and back portions (5a, 5b) to form a pair of leg opening portions (14a, 14b), a unitary waist opening portion (13), and a waist portion located between said waist opening portion (13) and said leg opening portions (14a, 14b), said waist opening portion (13) and a pair of leg opening portions (14a, 14b) being provided around entire peripheral edges thereof with elastic members (8a, 8b, 11a, 11b) forming substantially continuous gathers

45

characterised by

a further elastic member (16, 16a, 16b) attached to said integrated body unit (5) between said waist opening elastic members (8a, 8b) and said leg opening elastic members (11a, 11b) for forming gathers at least partially in the surrounding direction of said waist portion.

50

2. A disposable diaper as claimed in claim 1, wherein said body unit (5) includes an elastic member (16, 16a, 16b) for continuously forming a gather in said surrounding portion of said waist portion.

3. A disposable diaper as claimed in claim 1, wherein said body unit (5) includes an elastic member (16,16a,16b) forming a gather on both side portions of said waist portion.
4. A disposable diaper as claimed in one of claims 1 through 3, wherein said gather is formed by a plurality of elastic members (8a,8b,11a,11b,16a,16b) arranged in juxtaposed relation at spaces.
5. A disposable diaper as claimed in one of claims 1 through 4, wherein each of said leg opening portions (14a,14b) forms a substantially continuous gather by partly superposing a plurality of elastic members (11a,11b).
- 10 6. A disposable diaper as claimed in one of claims 1 to 5, wherein expanding stresses in the surrounding direction of the surrounding portions of said waist opening portion (13), said leg opening portions (14a,14b) and said waist portion are different.
- 15 7. A disposable diaper as claimed in claim 6, wherein the stresses in a 50% stretched state of the surrounding portion of said waist opening portion (13), the surrounding portion of said leg opening portions (14a,14b) and the surrounding portion of said waist portion are in relation that the stress of the surrounding portion of said waist opening portion (13) is the biggest of all, and the stress of the surrounding portion of said leg opening portions (14a,14b) is bigger than that of the surrounding portion 20 of said waist portion.
- 25 8. A disposable diaper as claimed in claim 6 or claim 7, wherein the maximum value of the stresses (per 5 mm in width and 10 mm in length) in a 20% stretched state of the surrounding portions of said waist opening portion (13), said waist portion and said leg opening portions (14a,14b) is 10 to 120 g, the maximum value of the stresses (per 5 mm in width and 10 mm in length) in a 50% stretched state thereof is 20 to 150 g, and the maximum value of the stresses (per 5 mm in width and 10 mm in length) in a 100% stretched state thereof is 30 to 300 g.
- 30 9. A disposable diaper as claimed in one of claims 6 through 8, wherein the stresses in a 50% stretched state of said stomach portion (5a) and said back portion (5b) in the surrounding portion of said waist opening portion (13) are different.

Patentansprüche

- 35 1. Wegwerfwindel (15, 18) des Höschentyps mit einer flüssigkeitsdurchlässigen, oberen Lage (2), einer flüssigkeitsundurchlässigen rückwärtigen Lage (3) und einem dazwischen angeordneten, absorbierenden Teil (4), wobei die obere Lage (2), die rückwärtige Lage (3) und das absorbierende Teil (4) eine vereinigte Körpereinheit (5) bilden, wobei die Körpereinheit (5) in einem Bauchbereich (5a), der bei Gebrauch an der Bauchseite des Trägers anliegt, und einen Rückenbereich (5b) geteilt ist, der in Gebrauch an seinem Rücken anliegt, wobei der Bauchbereich (5a) und der Rückenbereich (5b) an beiden Seitenkantenbereichen jeweils des Bauch- und des Rückenbereichs (5a, 5b) miteinander verbunden und aneinander befestigt sind, um ein Paar von Beinöffnungsbereichen (14a, 14b), einen einheitlichen Taillenöffnungsbereich (13) und einen Taillenbereich zu bilden, der zwischen dem Taillenöffnungsbereich (13) und den Beinöffnungsbereichen (14a, 14b) angeordnet ist, wobei der Taillenöffnungsbereich (13) und ein Paar der Beinöffnungsbereiche (14a, 14b) um ihre gesamten Umfangskanten mit elastischen Teilen (8a, 8b, 11a, 11b) versehen sind, um im wesentlichen gleichmäßige Falten zu 40 bilden, gekennzeichnet durch ein weiteres elastisches Teil (16, 16a, 16b), das zwischen den elastischen Teilen (8a, 8b) der Taillenöffnung und den elastischen Teilen (11a, 11b) der Beinöffnung an der vereinheitlichten Körpereinheit (5) angeordnet ist, um Falten zumindest teilweise in der den 45 Taillenbereich umgebenden Richtung zu bilden.
- 50 2. Wegwerfwindel nach Anspruch 1, wobei die Körpereinheit (5) ein elastisches Teil (16, 16a, 16b) aufweist, um eine Faltung kontinuierlich in dem den Taillenbereich umgebenden Bereich zu bilden.
- 55 3. Wegwerfwindel nach Anspruch 1, wobei die Körpereinheit (5) ein elastisches Teil (16, 16a, 16b) enthält, das eine Faltung an beiden Seitenbereichen des Taillenbereichs bildet.

4. Wegwerfwindel nach einem der Ansprüche 1 bis 3, wobei die Faltung durch eine Mehrzahl von elastischen Teilen (8a, 8b, 11a, 11b, 16a, 16b) gebildet wird, die mit Abständen nebeneinander angeordnet sind.
5. Wegwerfwindel nach einem der Ansprüche 1 bis 4, wobei jeder Beinöffnungsbereich (14a, 14b) eine im wesentlichen kontinuierliche Faltung bildet, die durch eine teilweise Überlagerung einer Mehrzahl von elastischen Teilen (11a, 11b) gebildet ist.
6. Wegwerfwindel nach einem der Ansprüche 1 bis 5, wobei die Ausdehnungsspannungen in der Umgebungsrichtung der umgebenden Bereiche des Taillenöffnungsbereichs (13), der Beinöffnungsbereiche (14a, 14b) und des Taillenbereichs unterschiedlich sind.
7. Wegwerfwindel nach Anspruch 6, wobei die Spannungen in einem zu 50% gespannten Zustand des Umgebungsbereiches des Taillenöffnungsbereichs (13), des Umgebungsbereiches der Beinöffnungsbereiche (14a, 14b) und des Umgebungsbereiches des Taillenbereichs zueinander in Beziehung stehen, so daß die Spannung des Umgebungsbereichs des Taillenöffnungsbereichs (13) die größte von allen ist und die Spannung des Umgebungsbereiches der Beinöffnungsbereiche (14a, 14b) größer als die des Umgebungsbereiches des Taillenbereichs ist.
8. Wegwerfwindel nach Anspruch 6 oder 7, wobei der Maximalwert der Spannung (pro 5 mm Breite und 10 mm Länge) in einem zu 20 % gespannten Zustand des Umgebungsbereiches des Taillenöffnungsbereichs (13), des Taillenbereichs und der Beinöffnungsbereiche (14a, 14b) 10 bis 120 g, der Maximalwert der Spannungen (pro 5 mm Breite und 10 mm Länge) in ihrem zu 50 % gespannten Zustand 20 bis 150 g und der Maximalwert der Spannungen (pro 5 mm Breite und 10 mm Länge) in ihrem zu 100 % gespannten Zustand 30 bis 300 g beträgt.
9. Wegwerfwindel nach einem der Ansprüche 6 bis 8, wobei die Spannungen in einem zu 50 % gespannten Zustand des Bauchbereichs (5a) und des Rückenbereichs (5b) in Umgebungsrichtung des Taillenöffnungsbereichs (13) unterschiedlich sind.

30 Revendications

1. Couche jetable (15, 18) du type short possédant une feuille supérieure (2) perméable au liquide, une feuille arrière (3) imperméable au liquide, et un élément absorbant (4) interposé entre elles, ladite feuille supérieure (2), ladite feuille arrière (3) et ledit élément absorbant (4) formant une unité corporelle intégrée (5), ladite unité corporelle (5) étant divisée en une partie ventrale (5a) qui, en place, est située sur le côté ventral du porteur et une partie dorsale (5b) qui, en place, est située sur son côté dorsal, ladite partie ventrale (5a) et ladite partie dorsale (5b) étant réunies et fixées ensemble sur les deux parties de bord latérales respectivement desdites parties ventrale et dorsale (5a, 5b) pour former une paire de parties d'ouverture pour la jambe (14a, 14b), une partie unitaire d'ouverture pour la taille (13), et une partie de taille située entre ladite partie d'ouverture pour la taille (13) et lesdites parties d'ouverture pour la jambe (14a, 14b), ladite partie d'ouverture pour la taille (13) et une paire de parties d'ouverture pour la jambe (14a, 14b) étant pourvues autour de leurs bords périphériques complets d'éléments élastiques (8a, 8b, 11a, 11b) formant essentiellement des fronces continues, caractérisée par un autre élément élastique (16, 16a, 16b) ajouté à ladite unité corporelle intégrée (5) entre lesdits éléments élastiques d'ouverture pour la taille (8a, 8b) et lesdits éléments élastiques d'ouverture pour la jambe (11a, 11b), destiné à former des fronces au moins partiellement dans le sens d'entourage de ladite partie de taille.
2. Couche jetable selon la revendication 1, dans laquelle ladite unité corporelle (5) comporte un élément élastique (16, 16a, 16b) destiné à former en continu une fronce dans ladite partie d'entourage de ladite partie de taille.
3. Couche jetable selon la revendication 1, dans laquelle ladite unité corporelle (5) comporte un élément élastique (16, 16a, 16b) formant une fronce sur les deux parties latérales de ladite partie de taille.
4. Couche jetable selon l'une des revendications 1 à 3, dans laquelle ladite fronce est formée par une pluralité d'éléments élastiques (8a, 8b, 11a, 11b, 16a, 16b) disposés en relation juxtaposée à

intervalles.

5. Couche jetable selon l'une des revendications 1 à 4, dans laquelle chacune desdites parties d'ouverture pour la jambe (14a, 14b) forme une fronce essentiellement continue en superposant partiellement une pluralité d'éléments élastiques (11a, 11b).
10. 6. Couche jetable selon l'une des revendications 1 à 5, dans laquelle les contraintes d'expansion dans le sens d'entourage des parties d'entourage de ladite partie d'ouverture pour la taille (13), desdites parties d'ouverture pour la jambe (14a, 14b) et de ladite partie pour la taille sont différentes.
15. 7. Couche jetable selon la revendication 6, dans laquelle les contraintes dans un état tendu à 50 % de la partie d'entourage de ladite partie d'ouverture pour la taille (13), de la partie d'entourage desdites parties d'ouverture pour la jambe (14a, 14b) et de la partie d'entourage de ladite partie de taille sont dans une relation où la contrainte de la partie d'entourage de ladite partie d'ouverture pour la taille (13) est la plus grande de toutes, et la contrainte de la partie d'entourage desdites parties d'ouverture pour la jambe (14a, 14b) est plus grande que celle de la partie d'entourage de ladite partie de taille.
20. 8. Couche jetable selon la revendication 6 ou 7, dans laquelle la valeur maximale des contraintes (pour 5 mm en largeur et 10 mm en longueur) dans un état tendu à 20 % des parties d'entourage de ladite partie d'ouverture pour la taille (13), de ladite partie de taille et desdites parties d'ouverture pour la jambe (14a, 14b) est de 10 à 120 g, la valeur maximale des contraintes (pour 5 mm en largeur et 10 mm en longueur) dans un état tendu à 50 % de celles-ci est de 20 à 150 g, et la valeur maximale des contraintes (pour 5 mm en largeur et 10 mm en longueur) dans un état tendu à 100 % de celles-ci est de 30 à 300 g.
25. 9. Couche jetable selon l'une des revendications 6 à 8, dans laquelle les contraintes dans un état tendu à 50 % de ladite partie ventrale (5a) et de ladite partie dorsale (5b) dans la partie d'entourage de ladite partie d'ouverture pour la taille (13) sont différentes.

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Fig .1

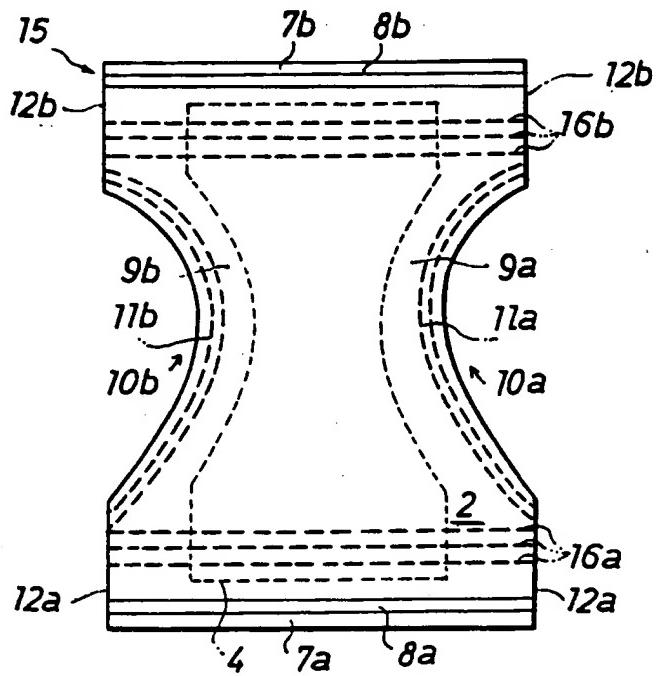


Fig .2

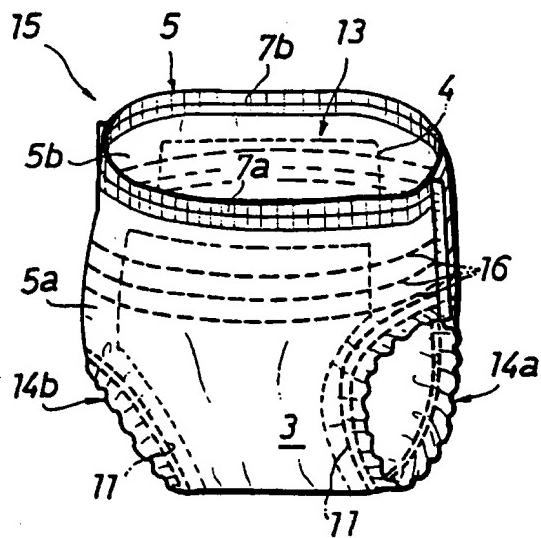


Fig .3

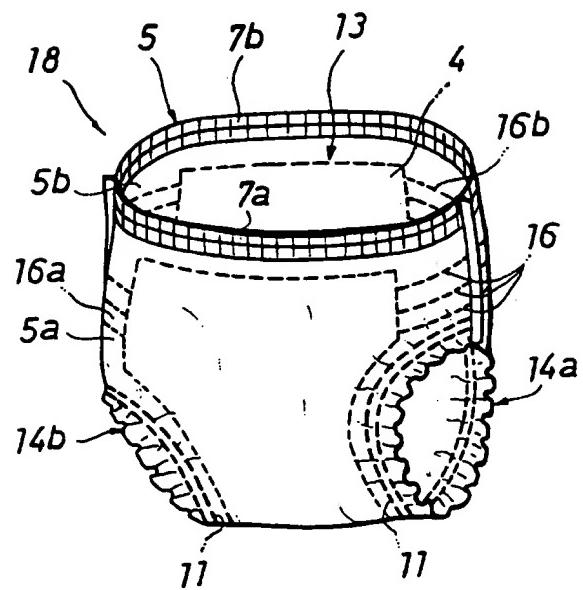


Fig .4

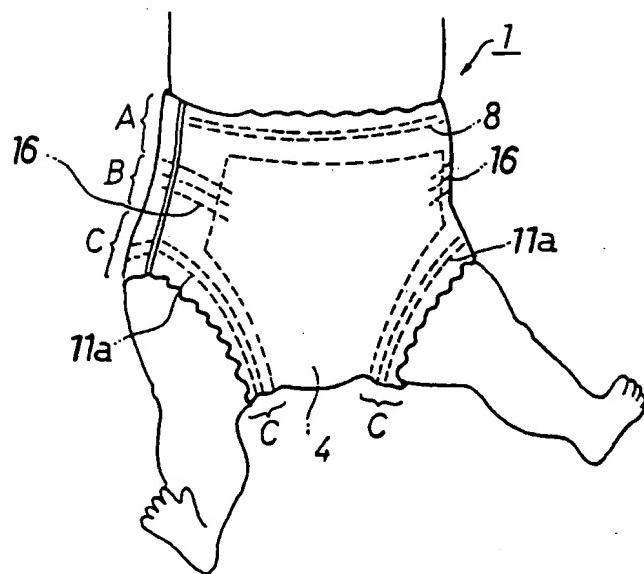


Fig .5

